

Listing of Claims:

**Claims**

1. (Original) A filter having a variable passband comprising:
  - a filter circuit having as inputs a signal to be filtered (a forward signal) and a reverse version of the signal to be filtered (a reverse signal), and having as an output a filtered signal as a function of a variable coefficient; and
  - a variable equivalent sample rate coefficient converter having an initial coefficient as an input together with a variable resampling rate parameter that determines the variable passband, and providing as an output the variable coefficient as a function of the variable resampling rate parameter.
2. (Original) The filter as recited in claim 1 wherein the filter circuit comprises:
  - a first IIR filter having the forward signal and the variable coefficient as inputs, and providing as an output a first filtered signal;
  - a second IIR filter having the reverse signal and the variable coefficient as inputs, and providing as an output a second filtered signal; and
  - means for combining the first and second filtered signals with the forward signal to provide the filtered signal.
3. (Original) The filter as recited in claim 2 wherein the combining means comprises a summing circuit having as inputs the first and second filtered signals and the forward signal, and providing as an output the filtered signal.
4. (Original) The filter as recited in claim 3 wherein each IIR filter comprises:
  - a gain stage having an input coupled to receive an input signal, and providing an output in response to a gain component of the variable coefficient; and
  - a decay stage having an input coupled to the output of the gain stage, and providing as an output a filtered input signal in response to a decay component of the variable coefficient.

5. (Original) The filter as recited in claim 4 wherein the variable equivalent sample rate coefficient converter comprises:

an asymmetric variable equivalent sample rate coefficient converter having as inputs the variable resampling parameter and a gain component of the initial coefficient, and providing as an output the gain component of the variable coefficient; and

a symmetric variable equivalent sample rate coefficient converter having as inputs the variable resampling parameter and a decay component of the initial coefficient, and providing as an output the decay component of the variable coefficient.

6. (Original) The filter as recited in claim 2 wherein the combining means comprises:

an input multiplier having as inputs the forward signal and an all pass gain coefficient derived from the variable coefficient and the variable resampling rate parameter, and providing an output;

a summing circuit having as inputs the first and second filtered signals and the output from the input multiplier, and providing as an output a preliminary filtered signal; and

an output multiplier having as inputs the preliminary filtered signal and a gain correction coefficient to provide overall gain for the filter, and providing as an output the filtered signal.

7. (Original) The filter as recited in claims 2 or 6 wherein the variable coefficient input to the first and second IIR filters is a decay component of the variable coefficient.